

# INNOVATIVE TECHNIQUES IN MARKET DEMAND REPOSITIONING AND STREAMLINING OF POST-HARVEST IMPERATIVES OF CARDAMOM TO RECAPTURE ITS LOST GLORY AS QUEEN OF SPICES

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## ABSTRACT

### AIM/PURPOSE

*Foremost aim is to re-position market demand by applying innovative techniques in globally branding Kerala Green Cardamom by projecting its qualities, intrinsic medicinal properties and values. To chart out suggestively some practically feasible methods to significantly improve the presently popular traditional post-harvest curing and grading activities along with the marketing efforts undertaken, can be made more adaptable and intrinsically attractive for acceptance in the more discerning markets abroad, to regain its position as the queen of spices.*

### BACKGROUND

*Cardamom is often called the “queen of spices”, because of its exotic flavour and aroma. It is the world’s third most expensive spice measured by weight, and has a warm sweet penetrating aroma of complex flavours, which is said to add an element of mystery to this ancient spice. The lack of scientific or even rational awareness of proper curing pattern of berries, water management system, rainwater harvesting, ground water recharging and also the absence of grading based on the percentage of intrinsic cardamom oil content and packing accordingly, which must be monitored as post harvesting processes, tend to its decline in market value.*

### METHODOLOGY

*Descriptive research design is adapted in this research to specifically quantify and assess the various factors affecting post harvesting and marketing of the spice. Sampling method used is Stratified random sampling method. The population is divided into strata based on the area of cultivation and sample is selected according to its representation in the population.*

### CONTRIBUTION

*This paper attempts to bring into focus the role of innovation in managing natural resources and agriculture sector to usher in advancement through science, technology and engineering, useful for agriculture and natural resources, which help to leapfrog through innovative genetic technologies in agriculture, promoting interactions between government, farmers, educational institutes, the private sector and the society at large and to prioritize the steps to be taken to regain the lost glory of the Indian Cardamom.*

### FINDINGS

*Lack of awareness among the farmers of the latest farming and post harvesting technology such as the modalities of drying, grading, processing technologies and marketing strategies leads to the ultimate decline of market value of cardamom. A rational and objective approach of study of the challenges and constraints in cardamom marketing cannot be accomplished in isolation or without a type of backward integration into the inherent deficiencies in the farming system which is not precisely oriented towards producing “what the markets demand”.*

**SUGGESTIONS**

*A coherently strategic and innovative market re-positioning endeavour for the superior grade of Kerala-grown or small cardamom (*Elleteria cardamomum*) to be projected and more cogent and strategic awareness campaigns for post-harvest activities and novel marketing techniques among the farming community and concerted efforts on shifting focus onto exports though smart market re-positioning has to be undertaken.*

**FUTURE RESEARCH**

*The industry is very wide and there are many areas to be studied in detail, including the export market, the use of better and more cost effective methods of farming and prevention of crop pests, how to overcome unexpected weather changes, how to coordinate various organisations and farmers, better preservation, packaging and oil extraction methods, and how advanced technology can be used to update farmers and businesses.*

**KEYWORDS:** Cardamom, Innovative Techniques, Global Marketing, Producers & Spice Board

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**INTRODUCTION**

Innovations are never *sue generis*, that is, innovative solutions or trouble-shooting inventive ideas generate only in that complex backdrop or situation in a systematic non-programmed style of approach, created by deeper and lateral thinking in totally different but related perspectives, sifted through common sense and objective methods of analysis and assessments. As necessity is the mother of all inventiveness, Cardamom marketing strategies need radical revamping.

**Relevance of Innovative Approach to Cardamom Marketing**

Kerala Western Ghats cardamom has been sold globally for centuries as an Indian monopoly, but with the fierce marketing challenges from Guatemala from the late 1980s, Indian cardamom marketing techniques were forced to be fine-tuned to confront such challenges successfully. It is here that the relevance of innovative marketing strategies becomes more pertinent.

**Cardamom to be Cultivated and Marketed as a Valuable Spice**

Articulating the market positioning of Cardamom as a potential spice instead of mere farm produce is the key to these marketing strategy innovations. Cardamom is popularly called the “Queen of Spices”, because of its exotic flavour and aroma. Its warm sweet penetrating aroma of complex flavours, which is said to add an element of mystery and its unique medicinal curative qualities as an organic spice, generally unknown abroad, can give it a strategic marketing edge

**The Concept and Need for Innovations**

Fundamentally, the basic stimulus for innovation concepts in cardamom farming and marketing begins with the cultivation methods which include both improving quality through long term sustainable methods and its various post-harvest treatments ending with marketing as a special spice. Collective and coordinated entrepreneurship networking between firms, knowledge institutions, should be mutually complementary and interactive. The resultant quality of innovation is not only measurable but also adaptable, in their sectorised composition of the ‘innovative circuits’, without losing relevant linkages, are to be facilitated.

### **Innovative Streamlining of Cultivation & Trading**

In an overall perspective, methods in farming and post-harvesting techniques on one hand and on the other, the emergent market scope in branding and re-positioning, are to be focused upon. It is also imperative to ensure that the results have abilities to positively percolate down and across the cardamom farming community.

The governmental promotional agencies have major roles in the formulation and implementation of policies. Moreover, innovations should be able to bring the aspired changes and its economic impacts quantifiable, being reckoned as exercises in management. Most of the farmers suffer from deficient institutional and infrastructural support, resources, investment etc.

Additionally, global climate changes drastically and unpredictably influence the productivity of cardamom, with Indian agriculture practices devolving around the rainy and drought seasons, also adversely affecting the growth of plants and berries and the processes of post-harvest treatments like drying, detoxification etc.

### **INHERENT MARKETING CONSTRAINTS**

Apart from the lack of access to the markets with considerable purchasing power, basic deficiencies in technological capabilities of producers, infrastructure facilities available, bargaining power and international market knowledge are some other factors that constrain and retard the growth of the Indian cardamom sector.

Moreover, the system devised for induction and application of innovations in agriculture, should have the resilience and flexibility to withstand farmer-trader resistances to different emergent attitude-changes.

A conceptual machinery to continuously monitor and update agriculture innovations once introduced, is direly needed. Emphasising and reinforcing the dimensions of innovation system, should be directed towards the improvement of contributions to GDP and quantitative earmarking for export envisaged since the national cardamom demand, oftentimes, get stretched to the supply, leaving hardly anything left for exports

Inculcating innovative techniques to farmers:-- The techniques of Problem Based Learning (PBL) and Information Communication Technology (ICT) are to be provided by educational and research institutions as well as the universities to enhance the capabilities of farmers. This is the cardinal determining factor.

Crucially important also is the relevance of studying the possible impact of changes in the attitudes of all the categories of first hand cultivators of cardamom. In the context of progressive and result-oriented social and technological changes in agriculture methods and attitudes towards marketing, comprehensive assessment as to how the concept of technology transfer from advanced to developing economies like in India can practically influence the infusion of innovations into the mind-sets of those farmers exposed or otherwise made aware of such changes

Moreover, in cases of such cardamom farmers and trade intermediaries who are used to the existing traditional styles of cultivation, there can be understandably some resistance to accept such changes or a sense of alienation towards any innovations based probably on their apprehensions of its practical scopes of application and long term benefits. The changes or slight modifications of various government policies allied to such innovative techniques are also very sensitive to encourage the process of innovations.

Therefore, analysing the role of policies formulated by the government, other private and public stakeholders and also of I.C.T can motivate the innovation process that would be beneficial for agriculture development. Some of the

innovation platforms in agriculture from the scientific and technical research of the developing countries, like biotechnology, nanotechnology, Geographic Information System (GIS) etc. can provide ample impetus to this.

Poor knowledge among farmers regarding disease and pesticides, lack of access to the grading, drying, packing and processing technologies, lack of skilled manpower in terms of “ The right man in right job” status, research and technology tools etc. must be borne in mind. Investments and funding in HRD and R&D towards cardamom farming, coordination, cooperation and linkage among government sectors, can address the lacunae.

Poor availability of inputs:- This is another restrictive factor especially of planting material. Therefore restructuring of the present system of implementations of the governmental support of Spices Board is essential. Holistic innovative approaches should be mainly focused on the interaction of the actors involved and analysis of how institutional, socio-political factors can shape such interactions.

The degree of objective extrapolations based on both the covert and disguised aspects as can be obtained through objective and in-depth studies. The projections of future possibilities and contemporarily probable progressions of developments are more of an experiential dimension to the extent possible. The findings are based on the evolved symptoms and lacunae betrayed over years of stagnant progressions in the deficiencies in agricultural innovations and also the attitude of cardamom growers towards gearing up their resources and methods to produce what the markets demand.

However, it is suffering from many structural infirmities that adversely affect the price, output and competitiveness. These calls for concerted efforts towards evolving an internationally competitive system of production which in turn, demands a vibrant innovation system to re-think on priorities through the coordinated actions of the different stakeholders of the cardamom situation.

Along with the removal of tariff barriers, the non-tariff barriers in the form of standards and the stringent phytosanitary conditions imposed by WTO, the MRL (Maximum Residue Level) norms of the USFDA (United States Food & Drug Administration) have become evidently stronger than ever before.

## **ROLE AND IMPACT OF INNOVATIVE TECHNIQUES**

Well devised and implemented innovations in the cardamom agriculture sector to usher in advancement through science, technology and engineering can drive benefits of developments in agricultural genetic engineering technologies and promote interactions between government, farmers, and educational institutes among the stakeholders.

Furthermore, it is vital to identify a framework of indicators that can be used to analyse the inputs, processes and outputs of the innovation system. Reinforcing the linkages between its components, institutions and policies which are creating the overall environment for innovation is essential.

Different education and training systems, generating different types of knowledge (codified or tacit) where institutions are playing a key role to transfer this knowledge to the various sector of agriculture is also required. Institutions tend to set the various norms, rules, practices, behaviours and cultural attributes of society that interact with sectors and organizations. Moreover, the framework also embraces various policies (general & agriculture) of a nation, determining the structure of institutions, education and knowledge system which are key drivers of the innovation system.

### **Selection of Representative Geographic Profile of Kerala**

Though cardamom is presently grown in other states of India sparingly, apart from Western Ghats of Kerala, within Kerala itself it is grown mostly in Idukki and also relatively extensively in certain pockets of Nelliampathy hills of Palakkad and in eastern Wayanad, all of which have very similar terrain, micro-climatic conditions soil strata and structure as of Idukki Western Ghats region. Hence the choice of research was primarily Idukki, where cardamom has always been a way of life and then Palakkad and Wayanad.

### **OBJECTIVES AND AIMS OF THIS RESEARCH**

- To assess through field visits in most of the seasons, the *in situ* complex socio-economic conditions of all types of cardamom farmers.
- To analyse first-hand, various production and post-harvesting problems of farmers vis-a-vis existing marketing practices adopted by them.
- To suggest suitable measures to improve the cardamom marketing system and present position of spices cultivation.
- To explore possibilities of a state sponsored campaigns or awareness creation activities in the major Indian cardamom importing countries
- To identify potential countries, where cardamom oleo-resins and essential (extracted) oil are the trendy demands (like North America, Europe, Far East) and the emerging demands from Scandinavian countries, including the Gulf nations to dimensionally reposition the market demand for cardamom.
- To contemplate seriously in terms of securing a commercial patent for the superior grade of Kerala cardamom, with the view to strategically re-position its status in the export market so that quantum of exports can be boosted progressively with identifiably assured or anticipated market potential.

### **Research Questions**

- What are the inherent deficiencies in the prevalent farming system of pre-crop and post harvesting processes?
- Whether indiscriminate application of pesticides on Cardamom is prevalent?
- Whether sorting, grading and packing are done to enhance market values?
- Whether mechanisation is adopted for cleaning the crop, like removal of mud, flowers and stalk or whether these works are manually carried out?
- Since the size and pale green colour of cardamom is the prime criteria for better price, especially in the export markets, Does the concept of “Produce for the market” was inculcated to the farmers?

## STATEMENT OF THE PROBLEM

### A. Problems with Post-Harvest Efforts

The lack of scientific or even rational awareness of proper curing pattern of berries, water management system, rainwater harvesting and ground water recharging must be monitored as pre- harvesting imperatives because the cultivation efforts are more or less continuous.

For most farmers, non-removal of chemical residues of chemical fertilizers /pesticides /fungicides lingering on cardamom pods leads to its rejection in the international market due to excess MRL level

Lack of Grading based both on the size of dried pods, pale green colour and the expected percentage of cardamom oil content and packing accordingly, are critical criteria, especially in the Middle East kingdoms, where the flavour and colour of pods are also being watched

Deficiencies in post-harvest and the pre-production The lack of ensuring that the plant beds are not water clogged or starving for water, particularly in the right time of plant growth and flowering-pollinating stages

The unfortunate but frequent incidences of crop loss due to the infestation of pests and diseases multiply the farmers' burden by reducing the yield of cardamom. Thus, not only the farmers but the livelihood and future of thousands of people who are engaged in cardamom related activities including the traders, exporters, labourers etc. depend on the success and prosperity of its cultivation

The problems and challenges in carrying out the post harvesting cardamom preparation meant for domestic and export markets, such as drying of pods, grading, removing impurities like remnants of flowers, fruit stalks, preservative packing, selling efforts whether locally or through the Spice Board auction centres etc.

### B. Problems with Marketing Imperatives & Grading

Focus Group Discussion (FGD) was held with the major players of the supply chain on functional performance, constraints and opportunities, the efficiency of the supply chain, profitability, prices, trends perspectives etc.

Marginal farmers and farmers sell their produces immediately after drying, without sorting or grading. But some producers, however, store for some period to wait for high price.

Many farmers resort to the local traders who give relatively high price, after seeing the sample. Marketing channels of the cardamom should flow from farmers/growers to local traders, wholesalers etc.

Now farmers are familiar with commodity future markets, and some of them are engaged in the future market. Farmers associations also try to make more profit through assembling their produce together and operate large scale.

Many of the marginal and small farmers sell their produce without grading or sorting. They approach local dealers with a sample of their produce and are offered prices. Farmers sell to those who offer highest price in whole lots or sometimes in partial quantities. The mutual trust and customer relationship nurtured over the years also basically influence price quoting and fixation

Farmers do not have easy or direct access to market information. But the medium or large farmers get reasonably fair price, as they offer their produce in e-auction.

Local traders are the intermediaries between the farmers and wholesalers also incur the cost of acquisition, cleaning, sorting, grading, packaging, transferring etc. Most of the farmers do not resort to grading or sorting

### **The Need for the Study**

The following operational defects and flaws are inherent and are to be corrected

- To draw attention to the general lacunae in awareness of the latest farming and post harvesting technology like modalities of drying, grading, processing etc.
- To make farmers aware of the modalities of MRL (Maximum Residue Level) which leads to most of our produce being rejected in the export market.
- To regain the lost monopolistic glory of Kerala cardamom as the 'Queen of Spices.
- Another need is to draw attention to the general lacuna in the realisation or awareness among the farmers of the latest farming and post harvesting technology such as the modalities of drying, grading, processing technologies.

### **SELECTED LITERATURE REVIEW**

There exists a conspicuous dearth of actual research studies and published study papers during the last two or three decades on the potentials to improve the lot of cardamom farmers and prudent marketing strategies. However, the recent and relevant few are as below:--

Punya Prasad Regmi, 2020, studying the scope of innovative techniques in up-gradation of post-harvest handling practices stated that the SUR logic used to examine such practices as:--

- Improved method of drying,
- Curing of cardamom seeds,
- Cleaning before packing
- Tail cutting (calyx)
- Grading based on size and colour,

It has been brought out that about one-third of the respondents had adopted improved methods of drying whereas about three-fifth of the respondents (62%) adopted curing. Nearly three-fourth (73.3%) of them had followed the practice of cleaning cardamom. On the other hand, less than 5% of respondents reported that they had been adopting the practice of tail (calyx) cutting.

Dharmendra Kalauni & Arati Joshi, 2019, commenting on the production economics, marketing and critical success factors of cardamom sector opined that price disparity coupled with production challenges are major immersing concerns in growth and development of this sub-sector. Overall benefit and cost ratio was found greater than unity (1.467). Cobb-Douglas production function showed that all cardamom-growing farmers were experiencing increasing returns to scale. Higher producer's share (90.32%) was found when farmer sell their large cardamom directly to the exporter while least producer's share (69.21%) was found in the domestic market channel with a large number of intermediaries

Moha Dutta Sharma & Yam Bahadur Thapa, 2017, on the cardamom quality as a strong antioxidant, exploring the potentials of cardamom on developmental, learning ability and biochemical parameters, enhancing learning ability and memory retention; estimation of monoamines neurotransmitters like dopamine and serotonin, non-enzymatic oxidative stress such as TBARS and GSH in the forebrain. The results indicated that the body weight gain was declining significantly.

## METHODOLOGY

Descriptive research design is adapted in this research to specifically quantify and assess the various aspects like

- Demographic profile of the planters,
- Areas under cultivation,
- Quantity of output,
- Yield per unit of land,
- Cost structure including familial labour costs,
- Cultivation practices
- Harvesting methods and processing techniques,
- Storage methods,
- Pattern of marketing,
- Market price fluctuations,
- Loan- credit facilities available,
- Cultivation profile,
- Problems faced in the marketing of cardamom,
- Promotional schemes of Spices Board,
- Opinion on its role
- Expectation from the Board and various other problems encountered by farmers in the production, marketing and export of cardamom.

## HYPOTHESES FORMULATED

The basic parameters adopted to draw hypotheses and other inferences objectively without deviating or losing the focus on the application scopes of innovative techniques both in the realms of farming, including post harvest processing activities as well as marketing efforts, in a practical perspective, are detailed below:-

- The existing demographic and agricultural geo-economic scenario of farmers.
- The style and convictions on existing cultivation style and also of methods
- Profile differences between small, medium, micro etc. farmers



- The practice of distress and selling to local known trade intermediaries
- The hesitation or reluctance to opt participating for e-auction of the Spices Board of India.
- Lack of interactions with the Spices Board and other state Government promotional or agro-extension departments
- Inadequate know-how of progressive methods of post-harvest processes like grading, detoxification to MRL etc.

H0 1: Despite the significant differences even among the small and medium cardamom farmers in terms of willingness to adapt progressive agricultural techniques, the scope for infusion of innovative techniques both in cultivation patterns, and optimised application of bio-fertilizers and fungicides exists conspicuously.

H0 2: Among farmers there exists apprehensions to adopt modern methods like soil-testing, intercropping, optimisation of overhead shade over cardamom plants, micro-irrigation, fertilizer-fungicide applications etc.

H0 3: Inherently significant differences exist between small and medium scale farmers and the plantation estate-level established agriculturists in the conceptual framework on style and operation of post-harvesting activities like grading, attention towards Maximum Residue levels of the produce made available to the market and such market-price determinants.

H0 4: Nearly significant differences exists between all categories of farmers including established agriculturists and the strictly organic cardamom cultivators using almost no chemical pesticides, fungicides, fertilizers etc. but bio-fertilizers and manure so that their products are easily accepted at markets abroad

H0 5: There exist a discernible lack of awareness, particularly among the small and medium farmers levels of mechanization in irrigation, spraying overdose of disease-preventive chemicals, replanting style, attitude towards e-Auction centres of Spices Board etc.

H0 6: The levels of participation in e-auction, now centralised only at Puttadi, Idukki district need to be substantially improved through appropriate innovative measures of decentralised nodal centres, with facilities to inculcate minimum internet awareness by official creative interventions by the Spices Board, at least initially, till the farmers are made confident themselves to operate independently.

H0 7: Advancing auctioned commodity prices immediately on acceptance by Spices Board can deduce delays, which acts as major deterrents these hypotheses were tested with the help of the standardized tools identified in the present investigation.

### **Sampling Method**

The sampling method used is the Stratified random sampling method. It is a method of sampling, which involves the division of a population into smaller groups based on the area of cultivation. A random sample from each stratum is taken, in a number proportional to the stratum's size when the strata are divided based on the area of cultivation.

Strata 1: More than 9 acres of cultivation

Strata 2: 6 to 9 acres of cultivation

Strata 3: Less than 6 acres of cultivation

## METHOD OF ADMINISTRATION

A total of 390 planters from three different districts of Kerala (Idukki, Wayanad and Palakkad) were contacted at their farms or houses with requests to fill in the questionnaire and their unbiased, genuine realistic responses, feelings, ideas and opinions were recorded.

The collected responses from the planters were scored tabulated, after suitable statistical treatments. The outcomes were interpreted, discussed and inferences drawn. It is clear that the alpha value of the scales included in the study is above 0.708 which is considered reliable value supporting the scale.

The collected data were processed with the help of appropriate statistical tools. The selection of statistical tools is based on the nature of data and the objectives of the study. The tools used are One-Way Anova, Chi Square, Garrett's Ranking Technique and Correlation

## FINDINGS

### Factors of Agrarian Post-Harvest and Pre-Market Preparations are Being Enumerated Below

The quality of produce mainly depends on the inputs and the methods adopted in its cultivation, processing, packing, storing, transportation etc. Therefore great care is to be given for the production of agricultural products from seedling or vegetative reproduction till periods of harvesting.

As a matter of habit or convention, it has been observed oftentimes that the drying of plucked berries are either incomplete or overdone, the expected pale parrot green colour do not remain or become faded, with the optimum drying period of between 10 to 12 hours in open sunlight, depending upon the intensity of sunlight. Colour of cardamom is, to many foreign buyers, one of the most important visible criteria determining its quality and freshness.

Impurities of many kinds get added during sunlight drying, as observed, while drying spread on packing bags or other covering materials of purchase of chemical fertilizers, pesticides etc. increasing chances of such residues lingering on the dried cardamom in traces not easily visible exist. Also during storage and packing including manual grading before packing, many types of impurities like stray dried flowers, pieces of flower stalks, leaves could be seen. Whether seed alone is used leaving the husk, as in the case of European and particularly Scandinavian markets, size of each seed, the method of packing and the size of each packet, are influencing factors.

The marketing approach, especially towards exports, should also bear in mind the other aspects determining quality criteria accepted in that country especially the more lucrative foreign markets where potential do exist but remain latent or untapped.

Cardamom growers are not assisted in overcoming procedural gaps in the processing and designing marketing efforts to suit the particular demands of potential consumers in the really potential international markets in a more innovative manner. A notable failure has been neglecting to draw a road map designed for the farmers of Kerala for sustained marketing augmentation techniques beginning from first steps of cultivation of cardamom plant itself.

The tendency among the farmers has been to sell most of their produce immediately after cropping and the rest later during the season itself. They can ill afford to wait beyond the season, in the expectation of a better price in future. This is another area where the Spices Board could step in with constructive MSP (Minimum Support Price) buying programmes International marketing costs of cardamom are very high, not correlated with the scale of operation and cost

of marketing. The small-scale producers incur proportionately more costs than the medium and large-scale producers in any international or market sales efforts, in addition to the margin of the various intermediaries.

Farmers' general ignorance on the crucial aspects of drying of cardamom, within the accepted range of 8 to 12 % range to avoid moisture related microbial contamination, drying on non-hygienic surfaces or sheets, not free from residues of pesticides and pungent chemical fertilisers, is another hazard not seriously reckoned and generally tend to be ignored by many farmers.

The washing and drying of harvested cardamom berries is also a matter of grave concern for the wholesalers. But only scant attention is paid for such methods, as a result of which the finished product can still retain traces of unwashed mud, over-dried up appearance, decolouration and even traces of pesticides visible. This ultimately creates many problems for the wholesalers, who has to store them in larger quantities than the other market intermediaries who collect them directly from the growers with only the process of grading and sorting carried out, initially.

Lack of awareness among the farmers of the latest farming and post harvesting technology such as the modalities of drying, grading. There are drying chambers and cardamom grading machines installed in the sites of some of the more established farmers, but their usages are also not regular owing to the erratic power supply situation in Idukki and also such activities need somewhat skilled labour for which there exists conspicuous dearth. Besides the average wage structure of Kerala labour is around Rs.700 upwards but the same from neighbouring Tamil Nadu significantly less but readiness in suitable and experienced labour availability still remain a problem.

Grading and Packing Dried capsules are to be graded according to the sizes of 6, 6.5, 7mm and 8 mm, which command the highest price, but were in very small quantities of procurement, possibly also because most of the farmers do not bother to sort or grade their produce size-wise etc. Higher graded commodity can fetch high price in market. Quality of cardamom is determined on the basis of size and green colour. The processed commodity is stored in polythene lined gunny bags. This packing helps to retain green colour and to avoid exposure to atmospheric moisture.

Marginal farmers and farmers sell their produces immediately after drying, without sorting or grading.. Some of them, on the other hand, tend to become ready for sorting and grading their products.

Many of the marginal and small farmers sell their produce without grading or sorting. So normally they get lower price than market price. The mutual trust and customer relationships are being nurtured over the years. This also basically influence price quoting and final fixation.

Farmers are not conscious about the quality of the product. They sell their produce to the local traders, and wholesalers who give a reasonable price and on very short notice or mostly on the spot, which itself is the temptation to sell to address their immediate financial needs of unorganised farmers who manages a livelihood with cultivation of cardamom, since years.

To ease down or reduce the labour intensive nature of the primary post-harvest operation of cleaning the berries from vestiges of cardamom flowers like the calyx, stalk, mud attached, the bunches are washed and labourers thrash them with their feet and then dried. The new invention, approved by the Spices Board of India is being increasingly used, reducing both labour costs and safeguarding the quality of berries and their yield.

With the shift from plastic to biodegradable packing materials, more research stands to be initiated on the possibilities of compatible packing materials for cardamom, because packing at the growers' level is found to have many inherent risks of contamination, microbial infestation, moisture-loss etc. as well as loss of the acceptable texture and pale green colour generally preferred in European Union and USA markets and to some degrees, recently, in the export customer base of the Kingdom of Saudi Arabia, our largest export market with a regular demand scenario

Only the medium or large farmers get a reasonably fair price, as they offer their produce in Spices Board's e-auction, thus ensuring market supply. Local traders are the intermediaries between the farmers and wholesalers and incur costs of acquisition, cleaning, sorting, grading, packaging and transferring as most of the small farmers do not grade or sort as a matter of prevalent practices. In turn, this results in their margin also being relatively low in view of the absence of graded qualities of cardamom

Most small farmers tend to sell off their cardamom crop to local procurers and intermediaries with whom they have long standing relationships before the advent of Spices Board's Auction centres (now replaced by single point e-auction centre) resulting into unhealthy marketing interplays

There is a generally felt lack of awareness also among the new breed of organic cardamom farmers at large, on the latest farming and post harvesting techniques like the modalities of drying, grading, processing and marketing strategies especially of the Organic type for which immense untapped purchasing potential exists, especially abroad.

## **INNOVATIVE SUGGESTIONS ON POST-HARVEST PROCESSING & MARKETING IMPERATIVES**

A coherently strategic and innovative market re-positioning for the superior grade of Kerala-grown or small cardamom (*Elleteria cardamomum*) is to be envisaged and more cogent and strategic awareness campaigns for post-harvest activities and novel marketing techniques of concerted efforts on shifting focus onto exports though smart market re-positioning has to be undertaken.

Dried capsules are to be graded according to the sizes of 6, 6.5, 7mm and 9mm, which command the highest price of more than Rs 7000 KG during the last quarter of 2019 for graded cardamom as per market sources, but were in very small quantities of procurement, possibly also because most of the farmers do not bother to sort or grade their produce size-wise etc.

Additionally, there is also the need to popularise other techniques of enhancing the parrot green colour of cardamom, which can be organically accomplished so much so that our cardamom can easily fit within the discriminating MRL (Maximum Residue Level) norms prescribed there.

The format of farmer-friendly interactions of the Government of Kerala Agricultural Extension and that of the Horticultural development as and wherever applicable, remain non-market oriented, i.e., not focussed on the needs of the export market. Crucial and mostly indispensable market information and practical aspects of technological developments do not reach the unorganised cardamom farming community and thus almost all their endeavours fail to reach out and convince farmers or exporters to achieve competitive marketing edge. Such inherent flaws or functional deficiencies need to be resolved.

## **SCOPE OF INNOVATIONS AND CONTRIBUTIONS OF THIS STUDY**

This research strives to articulate the inherent deficiencies in all factors at stake, as detailed below:--

Awareness on export opportunities, MRL acceptable abroad, organic techniques of removal of such residues on cardamom pods, the paradigm shift towards cardamom quality made available for export markets to be encouraged, as a large majority of ordinary farmers are not aware of the risks in the trade, especially in the foreign markets of the residue levels of chemical insecticides and fungicides. There is the need to inculcate to farmers that minimal use of chemical pesticides and fungicides would indeed go a long way in improving the standards of quality of the finished or packed cardamom, especially of the foreign markets.

Since only the left-over quantity of perhaps less than 10% of national production is traditionally earmarked for export with the capacity to earn nearly 40% as foreign exchange, there exists a dire need to encourage farmers and other market intermediaries to set aside the premium quality of both normally and organically cultivated selected cardamom in increasingly larger quantities so that earnings can be substantially enhanced.

One of the reasons why most cardamom farmers hesitate to opt for the export trade is the excessive delays in realising their sale payments, as compared to spot selling. It is a known fact that most of the cardamom farmers are having a hand-to-mouth lifestyle and simply cannot afford to wait for their sales payments beyond a certain period

More cogent and strategic awareness campaigns for preferring export trade to domestic trade among the farming community and concerted efforts on shifting focus onto exports through smart market re-positioning and global branding in order to systematically recapture its centuries-old traditionally prestigious export status of Kerala cardamom, have become all the more relevant and an imperative in the contemporary context.

Apart from Guatemala, Tanzania, Sri Lanka, Costa Rica, Honduras and Papua New Guinea are cardamom producing countries, though in small quantities and in most big or dark cardamom. These countries are able to supply cardamom at a price, which is far below the price of Indian cardamom, thanks to their lower production cost which is cardinally linked to their lower wages.

Whatever may be the competition, India is still the leader in spices production and export. In fact, more than 90 per cent of our cardamom production is consumed in India itself. It is amazing to see that only the remaining quantum of cardamom is exported from India and gives us nearly 35 per cent share of the world cardamom spices market. Thus, it becomes imperative that our export may be prioritised in the spice trade sectors, particularly of cardamom.

## **MANAGERIAL IMPLICATIONS**

Any efforts for infusion of innovative ideas have refined and reinforcing implications on management practices and concepts.

In the realm of cultivation practices existing mostly traditional fashion, innovative practices such as testing soil for its pH values, the content of microorganisms, understanding terrain structure determine the application of fertilizer both organic and chemical, optimised fungicide or pesticide spraying at the appropriate time, pruning, overhead shading, intercropping, micro-irrigation can improve a lot for farmers.

In the market-preparation realm, application of prudent and productive management like grading, organic detoxification, packing etc. are prerequisites.

In the realm of marketing, envisaging privileged branding market re-positioning as a valuable spice with untapped medicinal – curative characteristics of cardamom and improving popular participation in e-auctions, are crucial.

### **Future Research & Limitations of Present Study**

Many areas to be studied in-depth and detail, including the export market, the use of better and more cost effective methods of farming and prevention of crop pests, how to coordinate various organisations and farmers, better preservation, packaging and oil extraction methods, and how advanced technology can be used to update farmers and businesses. Conversely speaking, these are also the limitations of this research.

### **CONCLUSIVE SUMMING UP**

To conclude, it becomes all the more pertinent that there is an indispensable need for a paradigm shift for cardamom to be marketed as different from the contemporary perspective of only as a cash crop or aromatic spice commodity. It has to be marketed as adequately and attractively packed merchandise ready for direct consumption and in a branded style after having created sufficient awareness in the foreign markets thanks to its far superior properties and qualitative excellence as Indian cardamom, compared to the Guatemala cardamom so as to acquire for it a distinct market position and demand reinforcement.

Moreover, there should be proper market exposure to growers. In fact, innovation strategies should begin at the farm gate for meeting the demands for cardamom. Special care and attention are needed in extending the area under cultivation and to improve productivity through better scientific farm management practices & thus regaining the lost glory of cardamom as the 'Queen of Spices'.

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